Is There a Link Between Longer Operating Times and Increased Risk?

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Hardy et al. report an independent association between the length of surgery and complication rate. Should the prudent plastic surgeon limit surgery times to about 3 hours and consider staging operations that increase operating time beyond this threshold?

As the authors acknowledge, there are some limitations of a retrospective study based on Current Procedural Terminology codes. For example, the largest patient subgroup is labeled “lipectomies.” Presumably, this group includes liposuction cases and abdominoplasties. Liposuction cases are well known to have low complication rates and are typically performed in less than 3 hours. A simultaneous abdominoplasty often increases the operating time to more than 3 hours and introduces additional complications, such as infections, seromas, and delayed wound healing. Similarly, breast augmentations, done in about an hour, have a low complication rate. Low-risk breast augmentations and liposuctions favorably affect complication rates for operations lasting less than 3 hours. The difference in procedural representation at different operating times creates the appearance of a link between the complication rate and operating time.

To examine the effect of operating time alone, the researcher would need to eliminate confounding variables. The authors recognize the difficulty in separating procedure complexity from surgery time in patients undergoing combined operations. This cannot be done using statistics alone for patients who undergo, on average, 4.9 procedures in 1 operation. The closest one can approach this research ideal would be to study patients undergoing just 1 type of surgery. This study does include 2 groups of such patients: facelift patients and free flap patients. These subgroups showed no significant effect of operating time on the complication rate. A recent study also detected no significant association between the length of surgery and the complication rate after facelifts. These findings indicate that the controlling variable is the type of surgery; the surgery time is only indirectly related to the complication rate.

When evaluating other parameters that might be related to an increased complication rate, it is important to consider the patient characteristics of the different procedural groups. For example, low-risk breast augmentations are represented almost entirely by women, who are also likely to be younger than the overall average and thinner. Similarly, low-risk liposuction-only patients are likely to be disproportionately female and younger than the average study patient. An analysis that does not control for these differences is likely to conclude that male sex, age, and a higher body mass index are associated with increased risk.

The operating time ranges reveal some peculiar surgical times: 23 minutes for a free flap, 11 minutes for a pedicled flap, 43 minutes for an SMAS facelift, and, on the other extreme, 23 hours for a breast reconstruction with a tissue expander. The authors state that operations that fell into more than 1 category were counted in each group, yet the total number of procedures listed in the subgroups in Table 3 (1786) exceeds the total number of cases (1783) by only 3 procedures. One might have expected a larger difference, especially in view of the popularity of combined breast surgery and lipectomy (ie, “mommy makeovers”).

The type of anesthesia is often overlooked but is a key consideration. SAFE anesthesia (spontaneous breathing, avoid gas, face up, extremities mobile) reduces risk. Historically, surgeons have relied heavily on central masking of pain. With a better knowledge of safe dosing, peripheral (ie, in the tissues) pain blocking can be improved, reducing the need for systemic medications. Postoperative side effects such as nausea and sedation are minimized, shortening recovery room times. The mean recovery room stay after total intravenous anesthesia is 51 minutes. In a patient who is anesthetized but breathing spontaneously, the respiratory rate can help guide narcotic dosing in surgery. The need for narcotic antagonists (and their side effects) is almost eliminated. A patient who is adequately anesthetized locally can undergo a 6-hour facelift combined with other procedures, breathing spontaneously, using small doses of propofol and fentanyl, with quick awakening. Compared with a traditional general endotracheal

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anesthetic, the risk of thromboembolism is substantially reduced.\textsuperscript{5}  
The most important factor affecting patient morbidity is anemia from blood loss.\textsuperscript{6} A long operation may be blamed for postoperative morbidity when excessive blood loss is the true culprit. In the past, the blood loss from liposuction has been grossly underestimated.\textsuperscript{6} Aspirate volumes exceeding 5 L are associated with a third-space blood loss of more than 1 L.\textsuperscript{6} Steps to reduce blood loss include greater (1:500 000) epinephrine concentrations in the wetting solution (maximum, 5 L), allowing 20 minutes for it to work, and limiting liposuction aspirate volumes to 5 L when performed in combination with an abdominoplasty, which adds 290 mL of blood loss on average.\textsuperscript{6}  
I generally limit my operating times to about 6 hours, not because this length of time holds special meaning but because it is a loose marker for the extent of surgery. Cosmetic breast surgery conducted at the same time as body contouring surgery may be performed in a reasonable operating time (ie, 3-5 hours).\textsuperscript{2,3} Several large patient series\textsuperscript{2,3,7-9} reveal no increase in complication rates for combined procedures and higher patient satisfaction scores.\textsuperscript{10} An increase in complications after 3 hours is likely related to the type of procedure performed, not the operating time. Staging a procedure (eg, liposuction followed later by an abdominoplasty) would simply distribute the same risk over 2 operations. It would also create hardship for the patient, who now must endure 2 operations, 2 recovery periods, and increased cost.  
Imposing a time limit may unfairly restrict plastic surgeons who have learned to safely perform combined procedures to the benefit of their patients. It is our responsibility to identify the real causes of patient morbidity and adjust our habits accordingly.\textsuperscript{5} I frequently discuss with my patients which procedural combinations may be performed safely and without an unusually difficult recuperation, and they take part in the decision making. We want our patients to be informed, be satisfied, come back, and refer others. Safety is good for business.  

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REFERENCES  